High Speed Multi-Stage Code Search Algorithm In CELP

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Summary

An efficient multistage algorithm for code search in the code excited linear prediction (CELP) methods of speech coding is described. The algorithm requires binary clustering of the codebook into a fixed number of cells and inverse filtering of the incoming speech by the format and pitch filters to produce a residual error sequence (RES). It is demonstrated that the method could achieve a reduction in the number of operations from 40 to 50 times. It is shown that codebooks constructed from random walk stochastic sequences improve the average signal to noise ratio by 5-6 dB over codebooks constructed from Gaussian white noise sequences